GARDEN AND FOREST.

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A Proposed Invasion of Central Park.

IT seems as though there would never be an end of the necessity to defend the Central Park against aggressions and mutilations of one sort or another. A bill has once more been introduced into the Legislature authorizing the city authorities to issue bonds to obtain $300,000 for the erection of new buildings within the park for the menagerie which already exists there, and to extend its zoölogical collections. So often have similar bills been defeated, in deference to a genuine burst of popular sentiment expressed through newspapers and journals of every class, that we cannot feel serious fears that this time the result will be less fortunate. Nevertheless, it is incumbent upon us to say again that a scheme favoring the extension or even the permanent maintenance of a zoölogical collection anywhere within the borders of the Central Park is wholly pernicious and indefensible. It looks neither towards the best interests of the park nor towards those of the zoölogical collection itself. There is not a foot of the park which is not absolutely essential to its chief and only proper function as a breathing-space and pleasure-ground for the people, or a foot which can be sequestered without injuring that design which, as all critics, native and foreign, have agreed, is one of the very finest examples of landscape-gardening art that the world possesses. And, on the other hand, a good zoölogical garden ought itself to be a work of art—carefully planned for its special purpose and much more extensive in area than it could be within the Central Park.

This, however, is not the only scheme which has recently been advocated for the invasion of the park. In the pages of the *Pharmaceutische Rundschau*—a respectable and usually well edited trade-journal published in German in this city—a long article has been published declaring that the proposed botanical garden, of which much has lately been heard, ought by all means to be laid out within the bounds of the Central Park. A botanical garden, rightly established and conducted, would injure the park quite as much as a zoölogical garden. As much even as a zoölogical garden it needs to be controlled by scientific men, free from the interference of politicians. It appeals, more distinctly than a zoölogical garden, not to idle curiosity, but to intelligent curiosity and the definite desire for knowledge, and therefore is even less appropriate in a great popular pleasure-ground. And, finally, the soil of the Central Park is unfit for the establishment of a great botanical collection. Every old New Yorker knows what this tract of land was before Messrs. Olmsted and Vaux took it in hand. One great reason why it is so exceptionally interesting among works of landscape-gardening lies in the fact that Nature had seemed to say, Here, whatever you do, you cannot make a beautiful park. And the same fact partially explains that necessity for cutting out its plantations which from time to time excites well-meaning, but mistaken, popular protests. All other considerations apart, then, would it not be the height of folly to establish a botanical garden in a place which has been made a beautiful park only under the greatest difficulties?

In the proposed new parks in the northern section of the city there is room and to spare for both a fine zoölogical and for a fine botanical garden. Let the legislature there set apart the necessary space for them. Let money be collected from private givers in such amounts as will show a genuine popular interest, and then let the legislature, if needful, assist from the public treasury; and, as we have already advised, let governing associations, free from political control, be incorporated similar to those which control the Metropolitan and the Natural History Museums. Thus, indeed, there would be a chance that we should have collections worthy of the name. Nor need it be objected that the new parks would be too far from the centres of population to be really useful. We must think of the future as well as of the present; and even to-day, as has been pointed out by those in charge of the scheme for a botanical garden, the borders of the Bronx are as accessible as was Fifty-ninth Street when the Central Park was planned. By the elevated railways they can be reached from the City Hall in less than an hour, while these railways and the Bridge bring Brooklyn and Jersey City much nearer than they were to the Central Park twenty years ago.

We shall hardly be accused of a lack of interest in the establishment of a botanical garden at least, or of a failure to appreciate the fact that if rightly established and maintained it will be a boon and benefit not only to this city, but to the American people at large. Nevertheless, we frankly say that we would rather never to see it established than see the Central Park—that great monument to American art and priceless pleasure-ground of the poor—curtailed and ruined for its sake or for the sake of any other scientific or political or money-making scheme. It is certain, too, that the whole public shares our feeling, and that there would be no surer way for a legislator to ruin himself in the eyes of the people than to make himself an instrument in the defacement of the Central Park.

We begin this week a series of articles on the art of gardening which will both interest and instruct our readers. Born in the earliest times, this art has been practiced wherever men have lived in settled communities. It has gone through many phases, each of which reflected the spirit and the tendencies of the passing age, and has differed in different countries in harmony with the character of national civilization. Its developments in Europe, like those of all the other arts, may be grouped under two main types, one of which, as Alexander Humboldt pointed out, illustrates the temperament and expresses the æsthetic ideals of the South, while the other stands in the same relation to the North; and perhaps the most interesting portion of the history to be laid before our readers will explain that intermingling of these two types in modern days which finds a parallel in the present condition of architecture, painting and sculpture.

A number of histories of the art of gardening have been published in other languages, and German literature, especially, offers several of considerable size, compiled with much industry, and covering the whole field. But so far

as we have been able to discover, no such work exists in our language. Innumerable theoretical and practical treatises on the art of gardening have been written in English, and in some of them a certain amount of historical information is given. But we believe there is no English work that deals historically with the whole subject, or looks at it from the most instructive point of view—as an individual and independent manifestation of the artistic instinct, yet one which has a vital kinship with all the others, and a vital relation to the general course of human development. Indeed, even the most learned and voluminous German historians have either neglected to emphasize the close tie which binds gardening to architecture, or, while professing to do so, have not followed the best historians of architecture with regard to the points in question. We believe that this fault has been avoided in the present series of articles. Of necessity the articles will be brief, but they will give all essential historical facts and conclusions, with sufficient description of individual works to make their significance clear.

It may be granted that the history of gardening is less rich and varied than those of some of the other arts. Nevertheless, it is far more varied and significant than most persons realize. It is only when attention is concentrated upon any subject that its full interest appears, and but little attention has in our country been given to this one. What does Emerson say? "Each work of genius is the tyrant of the hour and concentrates attention on itself. For the time, it is the only thing worth naming to do that—be it a sonnet, an opera, a landscape, a statue, an oration, the plan of a temple, of a campaign, or of a voyage of discovery. Presently we pass to some other object, which rounds itself into a whole as did the first; for example, a well-laid garden; and nothing seems worth doing but the laying-out of gardens."

Nor was there ever a time or place when the laying-out of gardens was of more vital concern than it is with us to-day. Here in America we are confronted with problems more numerous, more varied and more important than those which any other age or country has seen. There is no reason why the art of gardening should not be carried in America to a higher development than any of which European history tells. And the surest way to foster such a development is for artist and public to acquaint themselves with the creations of the past. In this art, as in architecture, the time for ignorant experiment has gone by. Only catholic knowledge and cultivated taste can serve as the starting points for progress.

Longleat.

LONGLEAT HOUSE, of which an illustration is given on page 139, is one of the most famous among the great Elizabethan homes of England. It stands some five miles from the town of Warminster, in Wiltshire, and its founder was Sir J. Thynne, who caused its erection between the years 1567 and 1579. It is now the seat of the Marquis of Bath, and is in perfect preservation. The architect is supposed to have been John of Padua, which is probably the fact, for the touch of an Italian hand would explain the greater simplicity in outline and massing that we note when Longleat is compared with other houses of its time and class, while classic feeling also speaks from many of the details of its treatment. But in building this English country-home the artist by no means imported his scheme ready-made from Italy. He wisely accommodated himself to local tastes and adopted many local architectural devices. For example, the windows are without conspicuous pediments, and are divided by the transoms and mullions which so long survived in England after that Gothic art had perished to which they owed their origin. Moreover, instead of the straight façades which we find in Italian Renaissance palaces, here each of the four great fronts is provided with bays, having those side windows so beloved in England because so essential to the full revelation of the surrounding landscape. The front, most prominently shown in our picture, has three such bays, while the main or entrance front towards the left has four, with a stately doorway and flight of steps in the centre. The four great wings thus formed encircle a large interior court, in the centre of which, just back of the entrance, is a superb great staircase. The main wings are 220 feet in length, and the side wings 164. A second entrance leads into the gardens on the side-front opposite to that shown in the illustration.

The grounds around Longleat are of vast extent and great beauty. One of the entrance-gates is two and a half miles from the house, and from another a straight drive of a mile in length leads through one of the most stately avenues in England to the main doorway. The flower-gardens are divided from the deer-park by a charming sheet of water, and the park itself, some thirty miles in circumference, feeds more than a thousand deer. Gilpin, in his "Forest Scenery" (1791), speaks thus of the beautiful situation of Longleat: "A great house stands most nobly on an elevated knoll, from whence it may overlook the distant country, while the woods of the park screen the regularity of the intervening cultivation. Or it stands well on the side of a valley which winds along its front, and is adorned with woods, or a natural stream hiding and discovering itself among the trees at the bottom. Or it stands with dignity, as Longleat does, in the centre of demesnes which shelve gently down to it on every side."

The Art of Gardening.—An Historical Sketch.—I.

THE art of gardening means the art of arranging surfaces of land and water, with all the forms of vegetation they support and all such works of architecture or sculpture as may be thought desirable, according to some settled design or scheme. Its productions may vary in character between the most formal and the most natural-looking effects; and in size between the smallest bit of verdurous ground in a city street and the widest rural park. But they may always be distinguished by the fact that organized beauty has been sought in their creation. Horticulture aims at the development of beautiful individual plants. Economic gardening, like its sister craft of agriculture, so disposes the surface of the ground and the individual plants that cultivation can be most easily pursued. But when we speak of the art of gardening we imply a result in which, though individual plants are valued and usefulness is largely served, a beautiful general effect has been the main concern. Of course not all the results we see as the outcome of effort in this art are beautiful, but as much may be affirmed of any other art, and the aim, the intention, is the thing with which we must reckon in defining the field that an historical sketch should cover.

Gardening is thus a very complex art, serving (as I have said), not beauty alone but utility also, and demanding the assistance of architecture, of horticulture, botany and engineering. Yet it is a distinct and individual art, and its history shows many periods and phases, and is always expressive, to a most interesting degree, of the spiritual temper and the intellectual development of the peoples who have practiced it. But in tracing all the earlier stages of its story we must rely, to a far greater degree than with any other art, upon mere written and pictured testimony. Not only the huge monuments of the ancient architect, but the most fragile products of the potter, the glass-blower and the weaver, have come down to us from gray antiquity. But the gardens of the old world have wholly perished, and even those which were created only a few centuries ago have almost all been altered into something very unlike their first estate. A garden carries within itself the seeds of decay, and scarcely the most careful attention could preserve it forever. We can fancy, some old Roman garden, tended from age to age by skillful cultivators, renewing itself time after time, and reaching us in a flourishing condition. But even so, it would not be the same garden that the Roman artist had created. The main outlines of its scheme might be the same, but all its vegetation would have been often replaced, and could hardly have been replaced in entire accord with the first arrangement. And, of course, no approach to such care as this has ever been bestowed upon a garden. Being half the work of nature, gardens were even less likely to be cherished under difficulties than other works of art; and none decayed so quickly and entirely when once

the barbarian or mere neglect had laid a hand upon them.

The origin of art has been found by some in that desire to portray natural forms which led the cave-dweller to scratch the outline of a reindeer or a mammoth on a piece of bone; by others in that appreciation of the beauty of abstract lines and spots which the South Sea islander shows when he adorns his paddles and hatchets with incised patterns; and by at least one writer—Schiller—in the act of the savage woman who first bound a handful of wild-flowers into a garland or nosegay. But to find the origin of the art of gardening we cannot look back to savage times. Nor can we wisely conceive of it as practiced in the very earliest, most rudimentary periods of civilization. It must have followed and at first strictly depended upon the art of architecture. Not until men had built themselves solid dwellings and places of worship of some pretensions can gardens for the delighting of the eye have been designed. The fact may seem a strange one at first sight if we have been taught by the "romantic" school of thinkers, with Rousseau at their head, to picture a primitive civilization as one in which man lived "close to the bosom of nature" and loved her beauties far more than those which were due to his own efforts. Nevertheless, it is a fact in entire accord with all that we really know, and all that we can sensibly imagine, of a primitive society. In such a society nature must always have been regarded not as the friend, comforter and restorer of man, but as his enemy to be thwarted and subdued; and a different conception could not arise until man felt himself her master. What he first wanted was to get protection from the rigor of her elements, the attacks of her wild beasts, and the menaces of other men; and his first artistic efforts must have been to adorn his walls and roofs and to beautify his own person and the utensils and weapons he employed. The artistic impulse means the wish to make something individual—to put a fragment of the artist's self into the result; and it can have found an outlet in gardening only after men had grown well accustomed to living in settled habitations, and had lost their first intimate familiarity with nature in her wild estate.

Some authors have found the origin of gardens in the tree-worship of primitive ages. When fetishes were the gods, trees were even more universally adored than serpents, although, indeed—as the story of Eden is enough to prove—the two cults often went hand in hand; and when this stage had passed and abstract deities were worshipped, the earlier phase of development was perpetuated in the "sacred grove" which surrounded every temple in every ancient land. Other writers have imagined that the first gardens were merely homes for useful plants—edible vegetables, medicinal and incense-producing herbs. These the Nomad tribes carried about with them, and were forced to grow in protecting enclosures. Undoubtedly much in the development of gardening art was due to both these sources. But it is only when a desire for beauty of general effect makes itself clearly felt that art is born. And gardening, we may feel sure, had not reached this point until after architecture had made considerable strides.

Of course many early poets, and among them the poets of Judea, have described beautiful gardens as existing before structures of any kind. But, however early they may have lived, the mere fact that their words have come down to us implies a long-developed civilization; and the conditions and tastes they express are, I need hardly explain, those of their own period, not of the mythical period they profess to portray. When men were able to record themselves in perfected forms of speech they had long left the bosom of wild nature, had lost their first fear of natural forces and first familiarity with natural beauties, and were therefore in a position to appreciate the charms of the outer world and to long for spots in which they could enjoy them. We cannot believe that the "first man" lived in a garden, but it is entirely natural that when poets began to record their conception of primeval happiness they should have thus imagined. Bacon says that "when ages grow to civility and elegance, men come to build stately sooner than to garden finely, as if gardening were the greater perfection." And I may add that when men first came to work in art they must have begun to build before they began to garden, because a more rudimentary need was thus gratified, and a better outlet for the artistic impulse was thus afforded.

New York. *M. G. van Rensselaer.*

The middle-grounds and distances are the first subject of study for the artist in landscape. The beauties and deformities, the pleasing and unpleasing objects, which the more distant parts of the site and the surrounding country exhibit, or are capable of exhibiting, to the house or other principal place of view—these are his unalterable data.

Planting and Rural Ornament, 1796.

Foreign Correspondence.

London Letter.

I HAVE lately been asked by a friend in America to inform him what species of Palms would probably thrive in the open air in the Southern States; and as this is a subject likely to interest many readers of GARDEN AND FOREST, I will reply through the medium of its pages.

At the outset I must state that, except at Kew, very few of the hardier kinds of Palms are cultivated in England, although recently some notice of the most ornamental of these has been taken by our horticultural journals. So far as I can ascertain, the same statement applies to such favored localities as the south of France, Italy, etc., where the conditions which favor the out-door cultivation of many extra-tropical, and even tropical, species of Palms are almost perfect. There are a few exceptions to this as in the garden of Mr. Hanbury, at Mentone, and in that of the late M. Dognin, at the Villa-Valetta, Cannes.

We are too apt to consider that all plants which are found in tropical countries must require stove-treatment. It took many years in the earlier stages of Orchid cultivation in England to convince gardeners that Orchids might come from the tropics of the old or new world and yet be what are termed "cool" subjects. I remember in my apprenticeship days a fairly large collection of these plants, which included Odontoglossums, Cattleyas, Masdevallias and Dendrobiums, every one of which were grown in a hot, moist stove; and it is not very many years since we were not allowed to carry an Orchid from one house to another without first enfolding it in cotton-wool. Ignorance of the conditions under which new introductions are found wild often cause one to make gross blunders in their cultivation. It is only three years since we received, for the first time, at Kew some handsome stems of one of the noblest of all tree Ferns, namely, *Alsophila crinita* of Ceylon—and not knowing more than that this species is a native of that island, we treated them as stove-plants. They grew rapidly, but the fronds died almost before maturing. Dr. Trimen, the Director of the Botanic Gardens at Ceylon, happened to visit Kew in time to save these plants for us. They grow only in the mountains, so that on removing the stems to our large temperate-house they soon recovered. Now they are magnificent specimens. Palms are not so delicate as tree Ferns, and many of them thrive in temperatures of considerable range. *Chamærops humilis* and *C. excelsa* (*Fortunei*) are examples of this, for they are perfectly healthy in a stove, quite as healthy in a green-house, and the latter species does very well out-of-doors in the neighborhood of London. The varying power of plants from warm climates to resist cold is often very remarkable. The Kniphofias and *Phygelius Capensis* occur to me just now as instances. Both are natives of the Cape, where they rarely, if ever, are frozen, yet in England they bear 20° of frost with impunity, whilst many plants which are their companions in a wild state succumb to the first frost here.

And now to the subject of Palms for temperate climates. In the Kew collection the following are perfectly happy in a house where the temperature is approximately the same as that in the open air all through the year, except that in severe weather it is never allowed to fall below 40°:

Jubæa spectabilis, the Chilian Wine Palm, a noble plant, with an enormous bottle-shaped stem and a massive head of large, dark green, pinnate foliage; *Chamærops humilis*, *C. excelsa* and *C. Martiana*, the two first well-known Fan Palms, with constitutions like nails, the last similar in leaf to *C. excelsa*; *Livistona* (*Corypha*) *australis*, a splendid Palm for a temperate climate, and also a first-rate tropical plant; *L. Chinensis* (*Latania Borbonica*); *Areca* (*Kentia*) *Baueri* and *A. sapida*, the former a truly noble Palm, with very strong, large, curved, pinnate leaves; *A. monostachya*, now called Bacularia, or the walking-stick Palm, a small Australian species, with stems one inch in diameter, five feet high, and a graceful head of irregularly pinnate foliage, and here rarely out of flower; *Washingtonia filifera* and *W. robusta*, both natives of southern California, and probably better known in America than here. These last grow rapidly in our coolest houses, preferring the border to pots, and their handsome leaves are greatly admired. *W. robusta* I have seen, in the famous collection formed by Herr Wendland at Hanover, with leaves six feet across, as stout as iron, with large brown teeth on the petiole, and the long, white filaments hanging from the blade-like silken threads. There is no Palm to surpass this for a temperate climate. In England it is scarcely known. All the Braheas are best here when grown in the cool-houses.

Two other Palms, generally known as Braheas, namely, *Erythea armata* and *E. edulis*, both natives of Mexico and both

grand plants. *E. armata* is cultivated in Belgium and other continental countries under the names of *Brahea Roezlii* and *B. calcarata*. It is not unlike a *Thrinax parviflora*, but the petioles are shorter and bear small marginal teeth, whilst the whole plant is of the most beautiful glaucous green—almost silvery. Here we call it the Silver Palm. It is scarcely, if at all, represented by large plants in English gardens. If any of your readers would kindly supply some definite information in regard to the climatic conditions and the character of mature specimens of this Palm, I, for one, would be greatly obliged. It is quite at home under cool treatment here. *Serenoa serrulata* is also a useful Palm for temperate climates. *Juania australis*, the Chonta Palm of Juan Fernandez, is developing nicely in a cold-house. We have only lately secured plants of this graceful and very interesting species, which had never before been in cultivation. It is very similar to *Glaziova insignis*, or, to take a better known plant for comparison, *Cocos Weddelliana*. But the foliage is more robust and the stem stouter. We have not yet tried the Glaziova under cool treatment, but I have been told it is quite healthy under such. We have a beautiful example of it in a warm-house at Kew. It is certainly one of the most graceful of all dwarf Palms. Its proper botanical position is in the genus Cocus. *Sabal Palmetto* is healthier in a temperate-house than in a stove, its erect-stalked, handsome foliage being most effective amongst other plants.

Phœnix dactylifera, P. spinosa, P. reclinata and *P. Canariensis*, the last named a very elegant Palm, almost as graceful as *P. rupicola*, which is the prince of the genus, flourish in a cool temperature. No Palm would be more likely to prove "as happy as a native" in your Southern States than *P. reclinata*, the dwarfer of the two African Date Palms. It is a bright green, elegant-leaved plant, rarely exceeding ten feet in height of stem, and always tufted. In the south-east of Africa it is one of the most attractive plants to be met with; at Kew it is in perfect health in the cool-house. *P. Hanceana*, a sturdy, compact species, native of Hong Kong, grows freely in the temperate-house.

The newest and probably one of the hardiest of Fan Palms is *Nannorhops Ritchieana*, from Afghanistan, of which large quantities of seeds were distributed from Kew a year or two ago. Like many Palms, it grows very slowly in the infant stage, but we have already found that it does not like artificial heat, preferring the temperature of an unheated green-house. In habit and the character of its foliage it resembles the Chamærops, but when large it is almost invariably tufted. In California and other of your warmer states it is certain to prove quite at home. (Thus far the Palms grown under cool treatment at Kew.)

From a descriptive account recently published of the famous garden formed by the late M. Dognin at Cannes, I have obtained some valuable information in relation to the hardiness of many plants which we usually keep in tropical houses. Thus, in addition to some of the Palms above mentioned, I find the following species were a perfect success in the open-air garden of M. Dognin, namely: *Cocos (Syagrus) campestris, C. australis, C. botryophora, C. flexuosa, C. Romanzoffiana* and *C. Yatai*. These are some of the very best of the genus: *Sabal Havanensis, S. umbraculifera, Thrinax Chuco, Ceroxylon niveum and Copernicia cerifera*.

The Villa-Valetta is one of the noblest gardens of sub-tropical plants in the Riviera; possibly in Europe. It is situated on the *Chemin de la Californie*, near the town of Cannes. The collection of plants, mostly exotics, is of the richest; succulent plants of all kinds, Araucarias, Dammaras and similar Conifers; many species of Bamboo, Tree-ferns, Cycads, etc., are represented mostly by exceptionally fine examples, all arranged and grouped in an artistic manner, and all in capital health. There must be many situations in the south of your country where the conditions, as regards climate, are about the same as those of the Riviera. The possibilities in horticultural art in such places must be very great. With so many noble-leaved Palms and Cycads, elegant Bamboos, Tree-ferns and the hosts of other plants available, the making of magnificent gardens, of a kind totally different from what we are accustomed to in the north, ought not to be difficult.

Probably your nurserymen know as well as we do here, that in raising a stock of Palms, even of those which are hardiest, tropical treatment for seeds and young plants is much quicker and often safer than cool treatment. The only exception known to me is that of the Nannorhops already referred to. The same treatment answers for young Bamboos.

Orchids.—Following close on the heels of *Vanda Amesiana*, we have a second new introduction of Messrs. Low & Co., which is described as being related to the former, the flowers quite as large, and pure white, with a rosy-purple lip. It has subulate leaves, erect peduncles, a foot long, bearing from fifteen to twenty flowers. It has been named *V. Kimballiana* by Professor Reichenbach. A quantity of plants of it were sold by auction in London last week. Since the introduction of the gigantic-flowered *V. Sanderiana* no new additions have been made to this genus except these two recent arrivals. *Cypripedium politum* is the best of the hybrids now in flower. It is distinct in form, and the colors, though dark, are clear and attractive, the dorsal sepal being very prettily penciled. *Pleione humilis* is about two months later than the Wallichiana group. Several pans, a foot across, and crowded with large lilac and purple-brown flowers, have been an attraction at Kew nearly a fortnight, and they are still fresh. The strongest pseudo-bulbs bear two-flowered scapes. *Dendrobium Findleyanum* is one of the handsomest of the early-flowering kinds, its large flowers, three inches across, the rose-tipped white segments, and large, spreading, yellow-throated labellum, being exceptional at this time of year. It blossoms freely, too, and the shining, curiously-knotted pseudo-bulbs are interesting at all times. *Dendrobium nobile*, var. *nobilius*, is in bloom, and its glowing, purple, medium-sized flowers are delightful. Indeed, an average form of the type of this species has very few superiors. The best of the East Indian Orchids now flowering is *Phalænopsis Stuartiana*. It is as good as, if not better than, *P. Schilleriana* as a garden plant. *W. Watson.*

London.

New or Little Known Plants.

Helianthus mollis, var. cordatus.*

MR. FAXON has here figured a well marked and very showy variety of a species which in its ordinary state is by no means striking. As usually found, the stem of *Helianthus mollis* terminates in a short and stiff racemose-like inflorescence, the few coarse and rather short-rayed heads being almost sessile in the axils of the small upper leaves. Here we have what may be called, for a sunflower, a graceful inflorescence, the large heads borne upon long bracted peduncles, and the numerous orange-yellow rays forming a broad expanse of color which is shown to the best advantage. There is a marked difference, also, in the leaves, which are here broadly ovate, with a very short acumination, instead of ovate-lanceolate, and the heads are often closely surrounded by three or four broad bracts resembling the leaves. Otherwise, the forms are the same, and the variety is connected with the typical form by intermediate states.

The whole plant is some three to five feet high, very leafy and hoary, especially toward the top, with a villous or somewhat rough pubescence. It is perennial and hardy. The common form is found in dry, barren localities through the Western and Southern States, from Ohio to Iowa, and southward to western Georgia and Texas. This variety has been in cultivation at the Arnold Arboretum for three or four years, from seeds that were sent by Mr. N. T. Kidder, and were probably from New Mexico or Arizona.

S. W.

Cultural Department.

Vineyard Notes and Studies.

THE many letters of inquiry which I receive about trellising and pruning Grape-vines lead me to fancy that something may be published yet on these topics which will be of interest, and may be of use to novices in grape culture. If grapes are to be grown for profit, it is evident that methods of culture should be planned as cheaply as possible. Two cents a pound for grapes does not leave much margin for extra cost in their production, and the prospect is now that grape-growers must reduce expenses to the lowest terms, or give up planting vines.

I prefer a trellis made of stakes, say four inches thick and four feet long, driven into the ground one foot and six inches. A single wire (No. 12) is stretched along on the top of the stakes, and is two and one-half feet from the surface of the ground.

* HELIANTHUS MOLLIS, Lam.; Gray, Syn. Flora, i. 276.—Var. CORDATUS, new var. Leaves broadly cordate, acute or short-acuminate; heads terminate on leafy branches or peduncles, often subtended by two to four leaf-like bracts.

Fig. 100.—Helianthus mollis, var. cordatus.—See page 136.

I would, usually, set the vines in rows, ten feet apart, eight feet distant from each other along the rows. The trellis need not be made until the third spring after the vines are planted. Before this time it is about as well to let them run on the ground. Thus three years' use of vine-stakes is dispensed with.

The stakes should be seasoned. I use White Cedar poles, sawed in lengths to suit. If, a few days before setting, they are given a foot bath of coal-oil their durability will be increased. Two feet of the bottom ends of the stakes may be dipped, and then set in a tub to drain for a few minutes. There

will then be but little waste of the liquid, and this preparation of the stakes will pay. It is of no use to dip them unless they are dry enough to absorb the oil. An impervious coat of paint would keep the sap in the wood, and thus hasten decay.

It is needless to set a stake to each vine. A stake every twelve feet is enough. Tie the vines to the wire. The canes will fasten of themselves. On this single wire may be carried as much fruit as the vines can mature. Twenty pounds is enough. I have had forty pounds, but then the fruit may fail to ripen.

The merits of this style of trellis are, first, cheapness; next, convenience. The vines are easily pruned and easily sprayed, which last operation will be necessary. The fruit is readily gathered, and the trellis is low enough to permit one to cross the vineyard in any direction. One need not creep under the rows or walk to the end of one to get on the other side of it. The grapes are near the ground, where they ripen better, and the vines trained low are less exposed to damage from winds.

Wire trellis is essential to the prosperity of the Grape-vine. It wants something which it can cling to and climb or run along, and it will treble its length of growth of cane if this congenial support be provided for it. The tendrils of the vine indicate that nature intends it to climb, just as plainly as the fins of a fish show that it is made to swim. We may notice how a Grape-vine will run when it gets into a tree-top, and can catch on to twigs and branches.

Another merit of the style of trellis described is that on it the vine may be preliminarily trained to stand alone by itself, if need be. I have many vines which, trained thus for years, can now stand like little trees. I keep them on the trellis for the sake of the advantage of the wire, but they are able to do without it.

Vineland, N. J. *A. W. Pearson.*

Some Useful Decorative Plants.

ASPIDISTRAS.—Foremost among those plants to which special attention is invited are the most useful *Aspidistra elatior* and its variegated form. Admitting that they are old-fashioned and comparatively common, still they possess much beauty. The long, graceful, dark-green foliage of the type, or the leaves of the variegated variety, striped with creamy white, both present most pleasing effects, and for endurance under adverse circumstances, as in the dry heat of a dwelling-house or in a dark hall, they are unequaled. They may also be used to advantage in sub-tropical bedding during the summer. As to cultivation, it is most simple, as when potted in good loam, given an abundance of water, and a temperature of from fifty to sixty degrees, with a partial shade during the summer, no further attention is necessary. Propagation is effected by division of the rhizomes, which operation may be performed at any time of the year, but preferably in the spring, the divided portions making a new growth in a short time at that season.

COPROSMA BAURIANA VARIEGATA.—This charming garden form of *Coprosma Bauriana* originated in Europe a number of years ago from seed collected in New Zealand, and makes a very ornamental shrub either for cool-house culture or for outdoor work in the summer, its glossy green leaves, with their broad marginal bands of yellow presenting so bright an appearance as to be specially noticeable. This is also an easy plant to grow after the young plants are once established, and with judicious pinching of the tips of the shoots will soon make a shapely shrub. The chief difficulty with some growers, however, has been found in rooting the cuttings, by which method the propagation of this variety is effected—the cuttings having a great tendency to damp off, unless carefully watered and ventilated. The best cuttings are small side shoots, such as those usually produced by an old plant that has been brought into a warm-house for a few weeks, and these shoots should be taken off with a small portion of the hard wood attached so as to form a heel for the cutting. Much care should also be taken to avoid any exposure of the cuttings to the full sunlight, as when wilted, even very slightly, they seldom recover sufficiently to produce roots.

EURYA LATIFOLIA VARIEGATA.—This charming plant is undoubtedly one of the best variegated plants for green-house cultivation, and it deserves to be more widely distributed than it has been. It grows freely in a Camellia-house, or in cool green-house temperature, and being naturally somewhat inclined to a pyramidal form, it soon becomes a highly ornamental specimen. Its foliage, somewhat similar in general outline to that of a Camellia, is beautifully marked with creamy-white, and in the young growth is frequently tinted with pink, and this, combined with a graceful habit, makes it a most attractive object. A moderately light, well-drained soil, containing a liberal quantity of peat, is preferable for it, and in its growing season it enjoys plenty of water both overhead and at the root. It is propagated by cuttings, which should be made of about half-ripened wood, and placed on a slight bottom heat, in a close frame, with only air enough to prevent damping. At best the cuttings take a considerable time to root, but with proper care a fair percentage of plants can be secured. In all probability this plant would prove hardy in some of the Southern States—at least in those localities where Camellias are found to do well out-of-doors—and if so, it would prove a decided addition to the shrubs for open-air planting.

Holmesburg, Pa. *W. H. Taplin.*

Notes from a Northern Fruit Garden.

FROM the fact that I not unfrequently see grapes growing and ripening in orchards and gardens where the vines are more or less in the shade, I am inclined to question the belief that grapes need all the sun they can get. If they need it anywhere, they do in northern Vermont and in Canada; yet I cannot discover that a moderate amount of shade retards ripening at all, except in the case of the Brighton, which, although a very early grape, does not even color here in dry, hot seasons when Delaware, Salem, Moore's Early and Eumelan ripen.

The practice of laying down Grape-vines and covering them for winter, is not universal; yet, with most varieties, in nearly all of New England this treatment pays. Growers find that even when the buds of uncovered vines all start well, the covered vines give a better crop, and ripen it earlier. If vines are planted against the south side of a light fence, laying them on the ground will be all the protection needed in a snowy country, as a deep drift will form in such a spot. Such a drift will not waste away for a long time where there is snow enough for pretty steady sleighing.

At the recent winter meeting of the Fruit Growers' Association at Montreal, which I had the pleasure of attending, it was the general testimony that the Wealthy apple, as grown about Montreal, or anywhere near the level of the St. Lawrence river, keeps no better than the Fameuse—that is, only up to the holidays. My Wealthys are sound and good now (February 15th), though Fameuse apples were gone soon after New Year, and this has been my experience in the dozen years that I have had the Wealthy in bearing. It keeps well until the vernal equinox; and the same is true of McIntosh Red, which, also, is complained of at Montreal as a poor keeper. My place is sixty or seventy miles south of Montreal, but it is nearly 1,000 feet higher. Still, I do not ascribe the better keeping of my apples entirely to the altitude of my land. The Wealthy matures with me, so far as I can see, as early as it does about Montreal—say about the middle of September. As soon as it is well colored it begins to drop, but growers do not seem to take the hint and gather it at once. If this is done, and the early part of the day if sunny chosen, the fruit if removed at once to a cool, dark cellar, will keep better than if it had been allowed to feel the many warm and even hot days of late September and early October. These are what hurry it on to over-ripeness and bring on early decay. It seems to me that this principle is applicable to all apples, as much so as to pears. As soon as the fruit will part readily from the tree it is ready to be gathered, and delay in this particular is at the expense, not only of keeping, but of quality. Wide alternations of temperature every day—at noon a burning sun, at night coolness even to frost—can have no other effect than to deteriorate quality and hasten decay.

Newport, Vt. *T. H. Hoskins.*

Orchid Notes.

Cymbidium Lowianum is a very handsome variety of the well-known *C. giganteum*, which produces stout, arching racemes nearly four feet long and bears about a score of large greenish-yellow flowers. The lip is particularly attractive. It is of pale yellow, the front lobe being of a uniform deep maroon, with streaks of the same color in the throat. This variety, like the type, when well grown is a fine ornamental plant even though out of bloom, and it can be grown with the general collection of green-house plants. It is a very vigorous and strong-rooting kind. It should be grown in rich loam, with leaf-mould and sand. It requires abundance of water, and it should at no time be allowed to get very dry, as it is nearly always in active growth. The flowers will last in perfection nearly four months if kept in a cool-house, and when cut they will last longer than any other Orchid I know. It is a native of Burmah.

Cœlogyne flaccida.—This is a very attractive species, growing and producing its flowers very freely. It has oblong fur-

rowed bulbs, with two dark-green coriaceous leaves. The pendulous racemes spring from the base of the bulbs, bearing about a dozen creamy-white flowers, the lip being prettily blotched and streaked with yellow and crimson. This is an admirable plant for basket culture. It grows best in the cool-house, with abundance of water. It should never be dry.

Another species in flower now is *C. ocellata*, which somewhat resembles *C. flaccida* in general appearance. This species produces half-drooping racemes from the top of the matured bulbs, bearing nine to ten comparatively large pure white flowers, relieved by irregular blotches of yellow margined with reddish brown on the lip. This is a superior species, and will be found extremely useful for cutting and for window decoration, as it lasts a long time. It needs the same treatment as *C. flaccida*, and, I think, grows even more freely than that species. The variety Maxima differs from the type in having larger and more numerous flowers on a raceme. Both kinds emit a delightful Cocoanut fragrance. This Orchid was introduced more than sixty years since from northern India, and should be met with more commonly than it is.

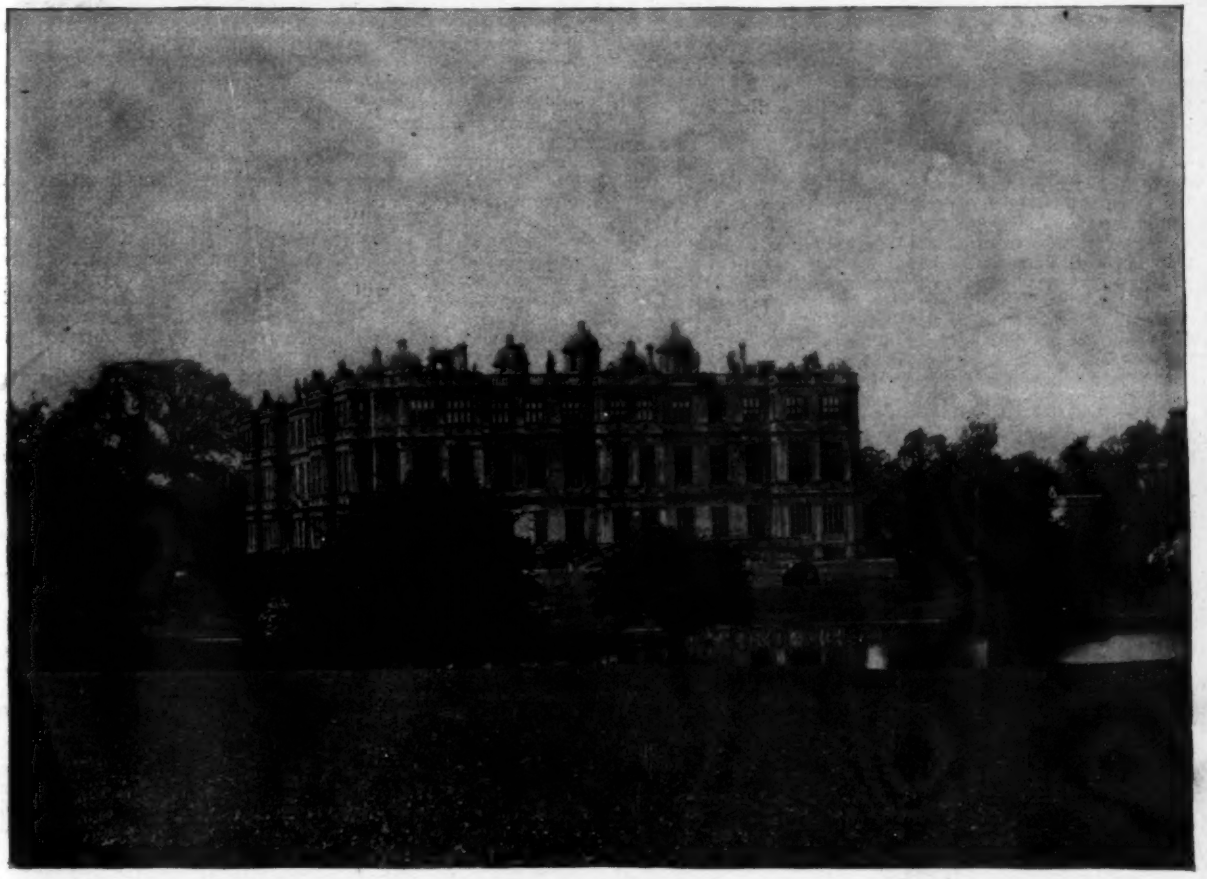
Phajus grandifolius.—This is one of the oldest and best known of all tropical Orchids, having been introduced more than 100 years since under the name of *Bletia Tankervilliæ*. It may be found in almost every green-house, and, consequently, is more rationally treated than many of its rarer congeners. We grow a quantity for cutting. It is unsurpassed where very heavy work is required. It lasts a long time, and will open its buds in water. The stout spikes are about three feet high, rising above the dark-green foliage and bearing a score or so of large white and brown flowers. It is a luxuriant grower, delighting in a compost of rich loam manure, and plenty of sand. Care should be taken to retain the old foliage until the new growths are well advanced. *F. Goldring.*

Kenwood, N. Y.

Veronica officinalis is one of our most valuable wild plants for planting in shady places where grass will not grow. It spreads very rapidly, and will cover the ground with a good permanent sod. It is very beautiful when in bloom, bearing spikes of small blue flowers about two to three inches long at the axils of the leaves.

I found this plant about fifteen years ago, growing wild in great abundance in the vicinity of Boston. Never having seen it in this section before, I called Dr. Gray's attention to it, and he stated that he had not before known of its growing on this side of the mountains of Vermont and New Hampshire. A few plants were then planted in the shade of some Pines, where they have flourished ever since.

This plant can be propagated very rapidly by making cuttings about three inches long and planting them in boxes of prepared soil two parts sand, and one of soil. They should then be placed in some cool spot where they will get a little light until spring, when a lot of nice plants will be ready to be set out.



Longleat.—See page 134.

One of the best features about this plant is the foliage, which is evergreen, keeping its color well all winter in the most exposed situation. *H. M. Pratt.*

Somerville, Mass.

Plant Notes.

The Soap-tree of the Chinese.*

In Garden and Forest for February 13th it was stated in the very interesting article on the Kentucky Coffee-tree that its Chinese congener, *Gymnocladus Chinensis*, "has not been introduced into the United States or Europe." This would, I believe, have been absolutely correct had it been written rather more than a year ago; at the present moment we have at Kew a number of plants about a foot high raised from seeds forwarded from Ichang by the indefatigable botanist and traveler, Dr. A. Henry. None of the plants have as yet developed characteristic leaves, but only simply pinnate ones with

* Gymnocladus Chikensis, Baillon in Compt. Rend. Assoc. Franç. pour l'Avanc. Sc. 1874. p. 418, t. 4.

narrower, smaller leaflets, much more rounded at the tips than those of its American relative. Judging from the aspect of the young plants the species seems likely to prove a quicker grower than the Kentucky Coffee-tree. In the Kew Herbarium there is a good series of dried specimens of *G. Chinensis*. These exhibit a marked character in the pod, which is only half the size of that of *G. dioicus*, and the foliage, as is already stated, is very different from that of the American plant.

On one of the tickets attached to part of Dr. Henry's material is the following information: "The soft substance inside the pod is used for washing the face by Chinese women. The seeds themselves are strung together and made into a sort of 'chain-armor' undershirt for wearing next the skin in summer by coolies." To a sample of pods in the Museum No. 1 is affixed the following: "They are beaten with a mallet and used as soap. Sold at about sixteen to twenty a penny."

It seems desirable to put on record the exact date of the introduction to cultivation in Europe of a most interesting and, what may also prove, a valuable tree. I have, with this object, penned the foregoing lines. So far as I know they form the first record of the tree from the standpoint of the cultivator.

Royal Gardens, Kew, February, 1889. *George Nicholson.*

Boronia heterophylla, figured and described in a recent issue of the *Révue Horticole*, is a newly cultivated species of a genus long known in gardens. It is a tall, glabrous shrub, with numerous slender branches; narrow, linear and sometimes pinnate leaves, and handsome and very fragrant red flowers, which are produced in the greatest profusion along the whole length of the stems. The Boronias are all natives of Australia, and excellent cool green-house plants. The present subject will probably prove a more vigorous grower than *B. megastigma*, the most commonly cultivated species, the flowers of which are not surpassed in delicacy and intensity of perfume, and it is pretty sure to become a popular addition to our winter-blooming green-house plants. *B. heterophylla* is said to have been introduced into European gardens by Miss Marion North, the celebrated traveler and flower-painter, whose collection of paintings, made from nature in nearly every part of the world, and presented by her to the English nation, is one of the most interesting features of Kew Gardens.

Principles of Physiological Botany, as Applied to Horticulture and Forestry.

XII.—The Growth of Organs.

BY the multiplication of cells in the manner described in the last paper, all the different organs of the plant are built up and the several parts are joined together. The laying down of the partition walls in these microscopic cells is never a haphazard matter. Every plane and curve falls into its place in obedience to the law of inheritance, and thus the sum of shapes of the cells gives us the inheritance as a whole. Hence, for example, the cell-growth of the Maple gives us the Maple tree, differing in some essential particulars from every other Maple tree, even of the same variety, having slight differences, perhaps, in the distribution of roots and buds and branches, but still resembling its kin in all essential features, so closely, indeed, that its relationships are easily recognized. The laws of growth which underlie this remarkable uniformity of shape in plants which are descended from a common stock are not at all understood, though many of the facts bearing on the subject have been recorded. Some of these may be noted in connection with this portion of our subject; other facts relating to growth must be deferred to a later stage of our examination.

The order of study which will be found most convenient is, first, the mode of growth of the organs in their order of succession; second, the conditions of growth, and lastly, some of the physical phenomena which accompany growth.

Growth of the Root.—In the seeds of our common forest trees the root exists as a single conical cluster of cells at the end of a rudimentary stem. In the grasses and allied plants the origin is multiple and somewhat different, but this need not concern the present treatment of the subject.

Growth of Roots in Length.—When the germ breaks through the seed-coats the root is generally the first thing to be seen, appearing at that period as a firm cone, which is seen to consist of two essentially unlike parts, an outer cap of flattened cells and a small group of minute cells in the hollow point of this cap. The root extends in length by the multiplication of the cells in this group. The renewal of the cap keeps pace with the extension of the growing point, and thus the slender, thread-like form, protected at its extremity, insinuates itself through the crevices of the soil in which it could not be forcibly thrust. Practically only a very short portion of the root is at all capable of growth in length; in fact, it is generally said that only the protected tip can thus grow. As a matter of fact, however, some of the extension is due to the enlargement of the cells just behind the point of true cell-multiplication.

Growth of Roots in Thickness.—The roots of our common forest trees and shrubs thicken by the addition of new cells substantially in the same manner as that which is characteristic of stems, to be described presently.

Growth of Roots by Branching.—The arrangement of roots is so much disguised by the distortions arising from the pressure of the soil that there seems to be no sort of regularity in their branching. But if roots are grown in water, especially water containing a sufficient supply of nutrient material, their arrangement is seen to be one of a good degree of symmetry. Each new root-branch starts naturally from a group of cells lying very near what one may call the shaft of the root. If, as happens when roots are closely pruned, the new root-branches are very numerous, there is no regularity at all in their distribution. Every root-branch, whether it arises from a pruned or an unpruned root, is provided at its slender tip with a root-cap precisely like that which belongs to the earliest roots, and the growth is after the same fashion. But there are a few differences in the directions taken by the main and the lateral roots, some passing downwards in a far more oblique course than the others.

Under favorable circumstances roots can start from any part of a stem, but they are more abundant at the joints than at any other places. All these roots striking out from the stem and branches obey nearly the same laws of growth which we have already noticed in those which appear underground. Thus, in striking cuttings, the roots which appear at the cut end of a shoot are in all substantial features like those which form in the natural way, as lateral branches in normal roots.

The Growth of Stems in Length.—The promise of the main stem of an ordinary forest tree is contained in the rudimentary bud in the seed. This is, like all buds, a shortened stem, in miniature, with most of its parts only dimly foreshadowed. When a bud unfolds, the future joints of the stem or branch are barely outlined, but as the development proceeds, these joints become well defined and the distance between them increases. In definite growth the end of the developing stem is terminated by a newly-formed bud, and at the close of the annual period of growth this new bud stands ready to unfold when occasion offers. Under ordinary conditions in our climate, the buds do not expand until the beginning of the spring period of growth, but if the leaves of a tree are swept off in summer by insects, it sometimes happens that there will be two growths from buds in a single year. In the case of plants which have what is called indefinite growth, there is no true terminal bud, but the stem or branch continues growing until it is stopped by frost; the growth in the following year begins in the uninjured parts.

It is difficult to realize that all the upward and lateral growth of our trees is from buds, and that when a given bud has ceased growing for the season, it has stopped its growth in length once for all, and all further extension of the stem and branches must be from the development of the newly-formed buds.

In case of injury to a terminal bud, some of the lateral buds appear as if stimulated to accelerated growth, and one or more of the off-shoots assumes the place of leader, and continues the upward development

The branching is, of course, dependent on the arrangement and the development of the lateral buds. Each bud is normally in the upper angle formed by a leaf with the stem, but there are certain exceptions to this. The normal buds govern the shape of the plant.

Seldom do all the buds of a plant develop. Those which remain inactive are soon covered up by the growth of the tree as it thickens, but under certain circumstances some of the buried buds may start into activity,

Growth of Stems in Thickness.—Confining our examination, as before, to our common forest trees and shrubs, it is to be noted that the stem, even in a very young state, can be easily distinguished into bark, wood and pith, together with thin plates of cellular tissue which fill the spaces between the wedges of wood. Just outside of the wood and under the bark is found a layer of cells (or more than a single layer), which possess the power of growth to form an inner part of the bark and an outer layer of wood, while at the same time it can keep itself in repair. This development of

the film of growth is usually continuous in a given season, but it may be interrupted, in which case it is possible to have two rings added to the wood in a single year, whereas, as everyone knows, there is usually only one new ring for each year's growth.

This film of growing tissue under the bark is often termed the cambium layer. At the earliest period of its growth it is charged with sweet nutritive matters fitted to serve as building material. If this cambium layer is injured locally, irregularities in development result.

Branches and roots thicken in much the same way as the main stem.

In closing this short statement of the manner in which a stem grows, it is well to note the manner in which a twig can be grafted or a bud can be implanted on a foreign stock. The success of the transfer depends upon the fitness of the cambium layer of the one to grow conjointly with the cambium layer of the other. If the union is not perfect, or if the two parts, scion and stock, are not the same structurally, complete union cannot take place.

Cambridge, Mass. *George Lincoln Goodale.*

Correspondence.

Squirrels and Conifers.

To the Editor of GARDEN AND FOREST:

Sir.—It is a sign of good common sense to say "I don't know" when it is not easy to know, but it is far from creditable to say "I don't know" when the means of knowing cannot be far away. I am never asked why the branchlets have fallen so thickly under Norway Spruce trees in winter without a sense of shame as I say, "I don't know." Whoever can tell me shall have my best thanks. I was about to draw a check for these thanks to a large amount in favor of Mr. Jack (see GARDEN AND FOREST, March 6th), but after reading I feel still compelled to answer, "I don't know." When he claims to have positive proof that squirrels do "all the mischief," he may speak from his own experience. No doubt he has gathered up branches cut off by squirrels. But he must be content with saying that they did cut his trees. They don't cut my trees. There are no squirrels where the seven trees twenty-four years old are now standing in my sight. The many hundreds of branchlets there could not be cut by an enemy not present. But if it be suggested that squirrels may be there at an odd time without my knowing it, I reply that the branches themselves show that they have not been cut at all. I enclose you a few gathered at random. You see the cut "done quickly and neatly with their sharp incisors" is a myth, so far as these branches are concerned. The cut is as ragged as the most fashionably edged piece of note paper could be. And as for their doing the work in order "to get at the buds," they could not reach down to the ends of the slender branches at the points where they are broken if they tried. And, more than this, not a bud, as you see, has been disturbed. In the many hundreds of branchlets that lie under my trees, not one bud has been disturbed, so far as I can find. I know that squirrels do cut branches to get at the seeds more freely. No one can tell an old seed collector, especially a collector of Pine seeds, anything new about this. Quite familiar with the gnawing of a pine branch by a squirrel, I can bravely say, the squirrel is not in this trouble at all. I am speaking of my trees, not Mr. Jack's.

I feel so mortified over this ridiculous puzzle that I examined the shoots again under a good glass to-day. It was evident there was no bending of the branch to break it. It could have been broken only by a force operating in the direction of the branch, a longitudinal power, it might be termed. Going to the tree and breaking a branch by pulling the twig in contrary directions, I found the fracture of precisely the same character, and so I deduce this truth that it must have been something pulling the twigs downwards that broke them. What can that force have been?

I have my own thoughts, but as yet they are but thoughts. To-day I confine myself to actual facts. I would ask you to say whether the twigs I send you do not confirm all that I say so far.

Germantown Nurseries, Philadelphia. *Thomas Meehan.*

[The specimens sent by Mr. Meehan evidently have not been cut off by squirrels. It is to be hoped that he will investigate this matter further.—ED.]

To the Editor of GARDEN AND FOREST:

Sir.—To supplement the interesting paper of Mr. J. G. Jack in your first March number on the disarticulation of Spruce twigs, allow me to say that while, no doubt, squirrels are to be blamed for much of the damage done in this manner, other causes are at work to which the damage is sometimes traceable, and this is especially true of deciduous trees.

It is well known, for instance, that Oaks and Poplars and some other species (Taxodium) are subject to a spontaneous disarticulation of their short shoots, very similar to the process by which the leaves are severed from their insertion at the base.

Another cause for the dropping of twigs in the Pine tribe is the work of a beetle larva (Hylesinus), which, hollowing the marrow of the twig, weakens it and promotes its breakage at the first severe wind.

I have also some notes of observations which credit hail-storms with part of this damage. Thus Forest-master Alers reports his observation made on June 19th, 1886, in a forty-year-old growth of Spruce: The tender shoots of the year, which had then a length of from one to four inches, were cut off by the hail always at the articulation. This happened before the eyes of the observer, and the freshly-broken twigs were lying on the white hail so thickly that he could not make a step without treading on them, while there had been none before.

In connection with this subject it will be of interest to note the observation of foresters, that after a large loss of the young twigs a rich seed year follows, which may be explained on the principle which induces fruit-growers to remove the young twigs for the purpose of stimulating fruit production.

I would offer two other possible causes for the damage. The one has suggested itself to me by observing that in the grounds of the Department of Agriculture, where squirrels do not abound, after severe cold, with high wind from the north-west, a large quantity of broken Spruce twigs without leaves was found, mostly on the north-west side. This may be explained by the rubbing of the tender, partly-frozen twigs against each other and against the stronger twigs, which latter also show loss of foliage due to the rubbing. This winter, which was free from icy blasts, no such broken twigs are observed, although the rubbing off of needles is quite frequently observable. The other cause may be referred to the neighborhood of a tree like the Birch, which in a high wind is apt to whip off the tender twigs.

Washington, March 9th. *B. E. Fernow.*

New Hampshire Forests.

To the Editor of GARDEN AND FOREST:

Sir.—In an article copied, in your issue of February 20th, from a Manchester, New Hampshire, paper, referring to the sale of state lands in 1867, injustice, doubtless unintentional, is done the late Gen. Walter Harriman in this sentence: "Most of the timber lands in Pittsburg, etc., were sold for twenty cents an acre during Gov. Harriman's administration." This sale of the public lands was authorized by a joint resolution of the Legislature, the proceeds being set apart by the next Legislature as a perpetual school fund.

Gen. Harriman's love of trees and of all plant-life was intense; his protests against, not only unnecessary tree-trimming, but also against the ruthless clearing of shrub growth on our road-sides, were constant and characteristically vigorous. He favored forest preservation and the protection of our rural hedge-rows and lanes from the unsympathetic treatment of the modern road surveyor; and none deplored more than he that destruction of the forests of his native state, which, as Mr. J. B. Harrison well remarks, is producing a "blight and a curse upon this sanctuary of beauty and peace."

Boston, Mass. *J. R. Leeson.*

The American Pomological Society.—III.

The Meeting at Ocala.

FURTHER abstracts of papers read at this meeting by members of the Florida Horticultural Society are presented below, and we may add in some future number articles on the Pineapple, the Fig and the Peaches and Grapes which have proved valuable on the Florida Peninsula. Many important papers by northern members were not read owing to the absence of the writers, but they will appear in the published proceedings.

The most important action of the Society in reference to semi-tropical fruits was the appointment of a committee to frame a "scale of points" for judging oranges—so that fruit from all portions of the country can be tested by a uniform standard. Of new varieties of fruits, very few

were added to the approved lists. The Lucretia Dewberry and the Early Harvest Blackberry were recommended for the southern states.

The Wilder medals were all awarded to Florida exhibitors at the Exposition in Ocala. The Lake County Shippers' Union, Marion County, Sumpter County, Lee County, Rev. Lyman Phelps, E. C. Hart and D. W. Adams each received a silver medal, while Citrus County, Polk County, Volusia County, O. P. Rooks and E. S. Hubbard each received a bronze medal. The county exhibits thus honored were collections of fruits and other products growing in each. The taste displayed in the arrangement of these exhibits, as well as the variety and value of material showed, plainly justified the unusual course of bestowing a prize upon a county instead of upon an individual exhibitor.

METHODS OF ORANGE CULTURE.

An essay on this subject, by the Honorable C. F. A. Bielby, gave complete instructions for growing oranges, beginning with the clearing of the land. This is an important matter, for vast tracts capable of yielding the best of oranges are still covered with forest growth, and Mr. Bielby described the approved methods for clearing each variety of land, namely: (1) The gray hummock, so-called, with its heavy timber of Live Oak, Hickory and Bay; (2) the black hummock or low level of dark mould covered with an almost impenetrable growth of hardwood and undershrubs; (3) the high Pine-land, a rolling country often from thirty to sixty feet above water, covered with stately Pines; (4) the medium Pine-land, level and from four to six feet above water, with trees as large but hardly as tall; (5) the flatwoods or low Pine-lands. On all these soils, which can again be divided according to the various subsoils, whether of sand, limestone, clay or coquina, the Orange will thrive, and as the grove-owner on each variety of soil is suited with his own, this proves that the advantages and disadvantages of each are quite evenly divided. To chop, pile and burn the growth on gray hummock, to grub the roots and burn again would cost from $75 to $100 per acre, while the burning would work a ruin to the soil from which it would not recover. To clear away the underbrush, pile it in windrows twenty-five feet apart together with the trees less than three inches in diameter; to cut the standing timber and lay it along the wind-rows; to grub a strip eight feet wide between the rows; to work this with the plow, and set the trees in well-dug holes, four feet in diameter and fifteen feet apart will cost $35 an acre. If the timber is left standing between the windrows and deadened, and if four-feet holes are dug fifteen feet apart, as before, the cost of clearing and planting will be $20 an acre, and although the dying branches will begin to fall the second year, and some of the Oaks themselves will soon follow, little damage will be done in this way, and the shade will be a help to the young Orange-trees.

The black hummock is usually wet, and needs surface drainage. All the undergrowth, with the smaller trees and some of the large timber, should be cut, and all can be burned with little injury to the soil. Much of the timber should be left standing to be thinned out as the Orange-trees occupy the ground. The trees should be set on mounds, or better on ridges twenty-five feet apart and running parallel with the drainage. To clear this land costs $165 an acre, and although the water is at the very surface, the Orange-tree flourishes on this deep soil producing bright, thin-skinned and heavy fruit. In the Pine-lands the cheapest way is to deaden the timber by girdling. The flatlands have been considered of little value, and even now in fairly accessible localities they can be bought for from one to five dollars an acre and the clearing will cost but five dollars more. On these low, wet Pine-lands Mr. Bielby once found a tree of enormous size from which 8,000 oranges had been taken in a single crop. None of the soil in these Pine-lands can be called good, but since moisture is the most important factor in orange-growing, an open sub-soil under little hills and valleys is the worst, while level Pine-lands with a clay subsoil is the most promising. Upon these Pine-lands, as knowledge of fertilizers and of methods of cultivation has grown, the greatest advance in Orange-culture has been made within the past few years.

In the northern part of the state varieties which ripen in October and November are to be preferred, so that the danger of freezing may be avoided. From Lake George down to latitude 28° 30′ December is a safe market month, while south of this, as in the Indian River country, where fruit hangs on the tree sound and sweet till March and April, the latest and finest fruit can be grown with safety and profit. Orange-trees should be set high, with their crown-roots showing well above the ground. The supply of moisture determines the method of cultivation. Where soil is light and dry the harrow should be used every ten days from February to November to keep the weeds from using the water which the trees need, and to conserve the supply of moisture in the ground by checking evaporation at the surface. For soils of darker color and finer texture, with underlying clay or yellow sand, the better method is to keep the soil stirred about the roots as far as the trees throw partial shade, and allow some growth of Crab-grass or the like on the remainder of the grove, not to be turned under while green, but to die down in autumn on the surface. In the black hummock and flatwoods the hoe should be used alone, but the flatwoods may be harrowed in dry years. The effort should be to preserve the moisture where there is just enough, and to use up the surplus where there is too much. With abundant moisture, the question of fertilizers is not so difficult, but it is always a serious one. On the alluvial hummock over marl, groves that have been bearing fifteen years without any fertilizers show no deterioration in brightness, sweetness, fineness of texture or weight of the crop, and for such soils the evil days seem yet far in the future. The gray hummock soil over clay and limestone will make trees five or six years old, but to trespass further upon the native fertility of the soil is to invite catastrophe. After this period groves on the gray hummock, and on the Pine-lands from the outset, fertilizers should be used. Caution in the use of nitrogenous material should always be exercised, but potash in the form of pure sulphate is invariably good, while phosphoric acid in ground bone, and lime in gypsum, are usually profitable applications. The above is but the skeleton of a part of Mr. Bielby's admirable paper, which included a discussion of the diseases and insect pests to which the Orange is subject. It was written in so clear a style and out of such fullness of experience and knowledge that all who heard it will watch with interest for the appearance of that Manual of Orange-culture which Mr. Bielby ought to prepare.

THE KAKI, OR JAPAN PERSIMMON.

After many unsuccessful attempts to introduce this fruit in the higher latitudes of the United States, Mr. P. J. Beckmans and the late A. J. Bidwell succeeded in establishing it in Georgia and Florida. Mr. B. F. Livingston, whose paper treated of this fruit, stated that no fruit tree in Florida grows as thriftily and vigorously and with so little manure and cultivation as the Kaki, especially when grafted or budded on the wild native Persimmon. This stock, however, is best grown from seed, as the old-field root-sprouts are barren and predisposed to attacks from a beetle, whose larvæ cut into the heart of the tree, and down through the pith into the large roots. Mr. Livingston's trees, grafted in February, 1888, on one-year-old seedlings, now average six feet high, exceptional specimens being eight feet high and two inches in diameter above the stalk. Trees should not be allowed to bear when too young, for they are very precocious, and February grafts sometimes set fruit in nursery rows the next summer. With no other fertilizer than swamp muck, specimens of the fruit weighing more than a pound have been produced, and the trees do well on all the kinds of Florida soil, from wet bottom land to high and dry soils. The fruit differs remarkably in size, color, flavor, texture and adaptability to varied uses. There is much confusion of nomenclature, but they can be grouped into families, each one having certain common characteristics, which were described by Mr. Livingston. His concluding advice was to select only well-established and identified varieties, as promiscuous planting would be sure to include many indifferent and almost worthless kinds.

Periodical Literature.

From a recent issue of the *Scientific American* we reproduce the following interesting information in regard to the manufacture of "Wood Cloth:"

Mitscherlich has applied the bisulphite process for reducing wood to the production of a fibre from wood which can be spun.

Thin boards or laths free from knots, but of any desired width, are cut into strips in the direction parallel with the grain, and are then boiled in a boiler containing a solution of sulphurous acid or bisulphite. This boiling effects disintegration without requiring that the strips of boards shall be reduced to very small pieces. After boiling the wood, it is dried in the open air or in specially constructed drying rooms. By thus drying the product, the fibre, which is originally very

weak, and tends to break at the slightest strain, becomes comparatively strong, and does not resume its very breakable condition on the addition of water. The operations are carried out as follows:

The damp masses on the frame are transferred to a traveling endless cloth, which leads them to a pair of rollers, which may be plain or provided with corrugations in the direction of their length, the ribs of the one roller being made to gear into the recesses of the other one, whereby they effect a simultaneous strong bending and squeezing of the masses. The cutting of the material in passing through the corrugated rollers is avoided by causing the endless cloth to pass over the lower roller and by placing a canvas covering around the upper roller. The pressed masses fall from these rollers on to a second endless cloth, which conveys them to a second pair of rollers, from which they are conveyed to a third pair, and so on, they being preferably pressed in this way six times. By continued treatment of the wood the fibres become at length so pliable and isolated from each other that they can be employed directly for coarse filaments. For obtaining a perfect isolation of the fibres, however, without material deterioration, these operations alone are not suitable, and their special purpose is to loosen the fibres in the transverse direction, so that in the following operation a thin, long fibre may be obtained. For this purpose the boiled and pressed masses are completely dried. After drying they are combed in the direction parallel with the fibres by means of devices provided with pins or teeth, in a manner similar to the operations for combing flax, cotton, etc., but with the difference that the pins or teeth of the apparatus must be made very strong. The separation of the extractable matter from the fibre produced by boiling the gums and soluble organic matter can be effected at any time. It is, however, preferably effected after the fibre has been spun into threads, etc.

Recent Publications.

Field and Hedgerow, by Richard Jefferies. Longmans, Green & Co., 1889.

Under this attractive title Mrs. Jefferies has collected, since her husband's death, twenty-nine of his latest essays, originally published in a number of different periodicals. The longest is the "English Deer-Park," about which a word was said in this journal when it was printed in the *Century Magazine* last autumn. Many of the others are bits of description, commentary or analysis, only three or four pages in length. But all have the distinctive stamp of Jefferies' mind and style strongly set upon them, and all were worth republication. The variety in ostensible subject-matter is also great. These are some of the titles: "Nature and Books," "The July Grass," "The Country Sunday," "Swallow-Time," "Buckhurst Park," "Some April Insects," "The Makers of Summer," "My Old Village," "My Chaffinch," and "Locality and Nature." Nevertheless, they may all be divided into two classes—those which chiefly exhibit the writer's keen love for the minutest facts of Nature, and those which chiefly reveal his equally keen interest in the minutest traits of rural man. Perhaps in future times the greatest value of the book may seem to lie in its record of the odd superstitions and methods of expression of the English rustic in this our time, and in the picture which, taken as a whole, it presents of his material and spiritual condition. But to us, interesting though it is in this respect, those pages which deal with birds and flowers and the countless aspects of the wide out-door world are the most attractive. Minuteness of observation and delicacy of analysis could no further go, and color facts, especially, are dwelt upon in a way which one would expect only from a landscape-painter with the most sensitive retina and the most extended experience. Jefferies himself would certainly have resented such a comparison, for his feeling about artists seems to be that they are men spoiled by the "conventionalities" of their craft for the clear observation and intelligent appreciation of the beauty which the world presents. Nevertheless, such powers of observation and appreciation as his are characteristically those which go to make up the artistic temperament; and despite the success he gained as a writer, one who knows what the study and practise of art really mean, must believe that he would have compassed a still higher success had he taken to painting instead of writing. What he wished most of all—he tells us himself over and over again—was to open the unseeing eyes of the average man to the loveliness of Nature, to define with the nicest exactitude her ever-varying charms of color and form, and especially to bring forth the spirit which underlies her colors and forms, and speaks through them to the human soul. And, as he likewise tells us in this volume, in the chapter called "Nature and Books," he finds language wholly unequal to the task, and decides that though millions of books have been written about Nature, the books which will really interpret her are still all to be indited. The truth is that such books cannot be indited. Language can never do the work that Jefferies wished to do. And though art cannot do all that he felt desirable in the way of the definite presentment of tiny, intangible details, it can interpret the spirit of nature to the spirit of man far more effectually than syllables of prose or verse. What is even Wordsworth's work in this direction to Corot's? With the sounds of Nature poetry, of course, can deal more or less successfully, while painting cannot deal at all.

> "The moan of doves in immemorial elms,
> The murmur of innumerable bees."

Such emotions as these words excite lines and colors cannot excite. But sight finds still more and richer food in Nature than sound; and had Jefferies been a painter he would surely have been better satisfied with his own lot as well as a more important factor in the delighting of the world. Then he would not have cried in despair, "The flower has not given us its message yet. . . . I want the inner meaning and the understanding of the wild-flowers. . . . Why are they? What end? What purpose?" Approaching such questions, as Jefferies did, from the intellectual point of view, no answer is possible; but approaching them from the artistic point of view the answer reveals itself to the painter as he paints, and the observer as he gazes. The end of Nature's beauty is the delighting of man, and it delights man fully only when he has read something of himself into her forms and colors. Unconsciously Jefferies felt this, trying, as he did, to read man into Nature with the help of words; but words were not the proper tools for his purpose.

Nevertheless, all that they could do, without the magic of rhyme and rythm, he accomplished; and there is no eye but will see more beauty in Nature, and see it more clearly, and appreciate it more intensely, after reading such passages as the one which attempts to analyze the color of the May Dandelion, or comments on the "Winds of Heaven," or in "Locality and Nature" describes a river-bank on Exmoor. The way, too, in which human and natural factors are constantly mixed together, no matter what may be the title of the page, is in refreshing contrast to the writing of many lovers of Nature, who seem to believe that because they love Nature they must either ignore or protest against the presence and the works of man.

Recent Plant Portraits.

Botanical Magazine, February.

STRELITZIA NICOLAI, *t.* 7038; a splendid arborescent species, long cultivated in European gardens, and, until 1858, when it flowered at St. Petersburg, confounded with another south African species, *S. Augusta*. The geographical range of the latter, and the exact locality where the former species grows spontaneously are still unknown.

STYRAX OBASSIA, *t.* 7039; "one of the most attractive of the many hardy shrubs introduced within late years from Japan, where it is a native of the southern mountains of Kiusiu and Sikok. Siebold, who discovered it in Japan, attributes to it no other property but its scent of Hyacinth." The hardiness of this very ornamental shrub, or small tree, in our northern states has not been entirely established yet.

IRIS MEDA, *t.* 7040; "this is a well-marked new Iris, which was discovered in Persia, in the year 1882, by the Austrian traveler, Polac, and introduced by him to Vienna. Its nearest alliance is with the south European *Iris Chamæiris*, of which the flower in the type is yellow, and of which there are two fine violet varieties." The perianth-tube of the flower of this new plant which has been produced in England in the gardens of Professor Michael Foster, whose collection and knowledge of Irises are unrivaled, is greenish yellow, copiously varied from top to bottom with brown; the outer segments are brown in the centre, with a dense yellow band. The flower is curious, rather than handsome in its markings; and its interest would seem to be rather botanical than horticultural.

OPUNTIA RAFINESQUII, *t.* 7041; a well-known and widely-distributed North American plant.

DENDROBIUM GRACILICAULE, *t.* 7042; an inconspicuous species of no horticultural value; a native of Queensland, of New South Wales, and of Lord Howe's Island.

ODONTOGLOSSUM CARISPUM, var. RUCKERIANUM SUPERBUM; *Revue Horticole*, February 1; M. André suggests that this fine plant, which is a native of the mountains to the north of Bogota, may be a natural hybrid between *O. crispum* and *O. Andersonianum*.

Notes.

Our associate, Professor A. S. Packard, sails for Europe this week, and will pass the summer in Germany and Italy.

The eighty-sixth annual exhibition of the Imperial and Royal Horticultural Society of Vienna will be held this year from the 25th to the 29th of April, inclusive.

One hundred and twenty different varieties of Willows are successfully grown, it is said, by Mr. S. J. A. Salter, F.R.S., in his private grounds near Basingstoke, England.

Professor Oscar Drude, Director of the Royal Botanical Garden in Dresden, Germany, has just published an atlas showing the geographical distribution of plants. The maps measure sixteen by fourteen inches, and the work can be bought for about $4.

It is reported from Berne, Switzerland, that recent snow-storms of exceptional severity have done much damage in that neighborhood, not only ruining many picturesque old bridges and houses but destroying thousands of the splendid Fir trees which clothe the mountain sides.

A year ago the Dutch horticultural journal *Sempervirens* asked for reports upon *Stachys tuberifera* for European cultivation as an article of food. Twenty-one reports were submitted, among which seventeen were favorable, recommending the plant as a valuable addition to the list of table vegetables. Good sandy soil, not too dry, is said to be the best for it, as the tubers then become beautifully white, while in heavier soil they assume a brownish color.

Chrysanthemums are largely cultivated in Dalmatia to supply chemists with the substance from which the well-known "Dalmatian insect powder" is made. The island of Lesina is the chief seat of cultivation, and the flower most generally grown is *C. cinerariæfolium Trev.* It is said that no other local crop pays so well, the product of a single acre of ground bringing a gross receipt of $500 to $1,500; and the government yearly distributes plants at very low rates in order that the industry may be still further developed.

Mr. Abbot Kinney's retirement from the California Forestry Commission is to be deeply regretted. He has devoted much time and study to the question of forest preservation in California, and his services to the state in this way have been great. His term of office has expired, and the Governor has appointed in his place Mr. F. J. Moffitt, a member of the State Senate. The other members of the Board, as it is now constituted, are John D. Spreckels and W. S. Moore. Mr. Kinney was Chairman of the Board, and its success in the past has been due to his energy and zeal.

Professor Rothrock contributes to the last issue of our valuable contemporary, *Forest Leaves*, an interesting article upon "Tree Growth as Determined by Location," which is graphically illustrated by the portraits of two White Oaks—the first grown in a forest and closely surrounded by other trees and the second developed in the full enjoyment of abundant light and space. The second tree is one of the most magnificent specimens of its kind which can be seen. It stands on the banks of Mantua Creek, in central New Jersey. This tree is not tall, but it has a spread of branches of one hundred and three feet, and a trunk diameter of six feet three inches.

Eastern Roumelia is the real source of the world's supply of Attar-of-Roses, many provinces sharing in its production, but the richest regions being those which lie around the famous Shipka Pass and the district of Maglis further east. The name Shipka itself means "Wild Rose." Here a famous White Rose is grown which has always been considered a peculiar species. But specimens collected on the spot by a person sent for the purpose by Dr. Dieck, Director of the National Arboretum near Merseburg, Germany, were recently submitted to Monsieur Crépin, the well-known authority on Roses, and he pronounced them "simply the typical form of the familiar *R. alba* of our gardens."

According to a writer in the *Gardeners' Chronicle*, singular survivals may still be found in England of ancient methods of "allotment gardening." In Somersetshire, for example, he says, "there are two large pieces of common land called East and West Dolemoors, which are divided into single acres, each bearing a peculiar and different mark cut in the turf; one of these is a horn; others are, four oxen and a mare, two oxen and a mare, a poleaxe, a cross, a dung-fork, an oven, a duck's nest, a hand-reel, and a hare's tail. About midsummer of every year these lots are 'raffled,' and each particular portion is taken over by one individual for the ensuing year. Archæological research affords several examples of this singular phase of allotment gardening."

Monsieur André dedicates, in a recent issue of the *Revue Horticole*, a new genus of *Bromeliaceæ* to Mr. J. G. Baker, the English botanist, who has long studied this difficult family. *Bakeria tillandsioides* flowered this year in the garden of M. Devansaye, who cultivates one of the largest collections of these plants in Europe, and who had received it from Brazil without a name. In habit it resembles a Tillandsia, but it produced a long, slender, flexible scape, with branches covered with numerous, small, violet-colored flowers. Judged by the colored plate published in the *Revue*, Bakeria, with its graceful inflorescence, springing from a rosette of narrow, silvery leaves, will make a charming addition to the number of ornamental plants of its family, which are more appreciated in Europe than in this country.

Dr. R. A. Phillippi, writing from Chili to the *Gartenflora*, speaks of a singular sight which met his eye on the way from Traiguen to Angol. "One sees great fields several acres in extent thickly covered with Oats, among which no other plant of any other kind appears, except, perhaps, some species of *Œnothera*. But the crop has not been sown by men, but is a spontaneous growth of *Avena hirsuta* from southern Europe, called 'Tiatina' by the Chilians. . . . In certain parts of Valdivia *Hypochæris radicata* has become a public pest; it stands so thickly that the rosettes formed by its leaves entirely cover the ground and permit no other plant to grow. Where it appears, however, it kills out two other pests —*Rumex Acetosella* and *Brunella vulgaris*—and in its turn is suppressed by *Trifolium repens* which is spreading more and more widely year by year. As European man drives out the native American man, so European plants drive out those indigenous to the soil."

Dr. Masters, in the issue of the *Gardeners' Chronicle* for February 9th, shows that *Abies subalpina* of Engelmann, a Fir of the interior Rocky Mountain region, is really the same as the tree of which a fragment gathered forty years ago in Oregon, is preserved in the herbarium at Kew, and to which Sir William Hooker applied the name *A. lasiocarpa*. If this view is correct, and the specimen, judged by the illustrations which accompany Dr. Masters' article seem to substantiate it, one of the most troublesome cases of synonomy among American trees is cleared up. Less clear is Dr. Masters' reference of Murray's *A. bifolia* to *A. subalpina*. We have never examined Murray's specimen, which is here figured by Dr. Masters. It is hardly worth while, therefore, to express any opinion in regard to it, and we only suggest that the size and shape of the cone, and the shape of the scale in Murray's specimen bear a strong resemblance to some of the intermediate forms which seem to connect *Abies grandis* and *A. concolor*, and which abound in southern Oregon.

A correspondent of the *Revue Horticole*, M. Desbois, of Orleans, sends to that journal the following interesting note on the effect of sulphate of iron upon the rigidity of the stems of plants. "The La France Rose, although beautiful, is often produced on the summit of a stem too feeble to support it. The way to obviate this is to water the plant when the bud is partly grown with a solution of sulphate of iron. The stems become, when treated in this way, sufficiently rigid to support the expanded flowers, which gain depth and beauty of color. I have used sulphate of iron in a large number of similar cases, and always with excellent results; and I have never known a plant injured by it, or found that too large a dose could be administered. The solution should be made stronger for plants growing in heavy soil than when the soil is light. During the last season a dozen Fuchsias treated with sulphate of iron flowered freely in spite of the unfavorable weather; the flowers were exceptionally brilliant in color, and the shoots were unusually vigorous. I saved by the same means a Marechal Niel Rose-bush which had been seriously injured by cold, but which entirely recovered, and is now more vigorous than ever." It is to be regretted that M. Desbois does not give the strength of the solution which he uses with such excellent results.

Catalogues Received.

P. J. Berckmans, Augusta, Ga.;—Green-house, Bedding and New Plants.—Robert Buist, Jr., 922-924 Market Street, Philadelphia, Pa.;—Seeds.—Z. De Forest Ely & Co., 1303 Market Street, Philadelphia, Pa.;—Seeds.—I. V. Faust, 64-66 North Front Street, Philadelphia, Pa.;—Garden, Field and Flower Seeds; also, Garden Implements.—Joseph Harris Seed Co., Rochester, N. Y.;—Seeds.—Johnson & Stokes, 217-219 Market Street, Philadelphia, Pa.;—Seeds.—Wm. Henry Maule, 1711 Filbert Street, Philadelphia, Pa.;—Seeds.—Robert Scott & Son, North-east corner Nineteenth and Catherine Streets, Philadelphia, Pa.—T. H. Spaulding, Orange, N.J.;—Chrysanthemums.